with the usual ten rows of extremely closely placed punctures, the sutural row short, the interstices feebly convex and finely transversely aciculate; the underside more metallic, the tarsi fulvous below, mesosternum scarcely raised, its epipleuræ smooth; claw-joint simple, tibiæ with longitudinal sulcus.

Hab. Paraguay.

This species is placed in the genus *Leptinotarsa* on account of the sulcate tibie, which have the sulcas extending to half their length; the colour of the antennæ and the slightly convex elytral interstices will easily distinguish the species.

Elythrosphæra cupreata, sp. nov.

Ovate, pointed posteriorly, cupreous, variegated with metallic green; antennæ black; thorax deeply and irregularly punctured; elytra deeply foveolate punctate, the punctures arranged in rows, cupreous, the suture metallic green.

Length 10 millim.

Apterous; the head finely punctured, with a central fovea, the vertex metallic green, the lower portion reddish cupreous; labrum and palpi black; antennæ rather long, black, the terminal two joints elongate, thickened, the basal joint metallic green; thorax one-half broader than long, the sides straight, the disc deeply foveolate and partly confluently punctured, cupreous, with a metallic green band at each side; elytra very convex, widened at the middle, the apex pointed, each elytron with ten rows of fovee, regularly placed, the sutural and lateral margins green, the disc cupreous; underside coloured like the upperside, the tibiæ metallic green, the tarsi black.

Hab. Rocco Nova, Parana, Brazil.

Of this very distinct species a single specimen is contained in my collection.

4. On a Collection of Fishes made by Dr. Goeldi at Rio Janeiro. By C. TATE REGAN, B.A.

[Received April 28, 1903.]

(Plates VII. & VIII.*)

The collection of Fishes made at Rio Janeiro by Dr. Goeldi contains examples of one hundred and twenty-five different species, four of which are described below as new to science, one of these belonging to a new genus. As most of the species represented have been recorded either from Rio Janeiro or from not very distant points on the Atlantic coast of S. America, it would be superfluous to give the full list; in a few cases, however, the occurrence of a species at Rio Janeiro has been thought worth special notice, and the opportunity has been taken to add some notes and to give diagnoses where it seemed useful. Dr. Goeldi

[#] For explanation of the Plates, see p. 68.

has presented the types of the new species and other desiderata to the British Museum, whilst the greater part of the collection has been sent to the Museum at Berne.

RAHDÆ.

RAIA CYCLOPHORA, sp. nov.

Snout with an obtuse triangular projection of moderate length. Anterior border of pectoral emarginate. Eye-diameter 3½-4 times in the distance from their anterior margin to the tip of snout and equal to interorbital width. Mouth strongly curved, 36-38 rows of teeth in the upper jaw. Body smooth, except for a series of 10-11 spines on the dorsal surface of the tail, and, in the male, a double series of curved spines on each pectoral.

Male with claspers extending to below first dorsal fin.

Uniform brownish, with a conspicuous black circle on each pectoral near the middle of its base.

Description based on two examples from Rio Janeiro—a female, 480 mm. in total length, and a male, measuring 410 mm,

Murænidæ.

Muræna helena Linn.

Five specimens from Rio Janeiro are all dark brown in colour, with numerous small white spots on the head, body, and fins. Examples from the Mediterranean in the British Museum Collection are similarly coloured, and it seems probable that M. insularum Jordan & Davis, from the Galapagos Is., which is said to differ from M. helena in having this system of coloration, in reality may not be distinct.

ATHERINIDÆ.

ATHERINICHTHYS BRASILIENSIS Quoy & Gaim.

Of two examples one has four dorsal spines, the other five. In the original description it is stated that the lower jaw is shorter than the upper, so that Messrs. Jordan and Evermann are incorrect in referring this species to Chirostoma, which is distinguished by "the very long and strong mandible, which protrudes beyond the upper jaw." The Atherinichthys brought from Mexico by Sallé and named A. brasiliensis by Dr. Günther, is a distinct but allied species, which I propose to name A. sallei*.

* ATHERINICHTHYS SALLEI, sp. nov. :- Depth of body rather less than length of ** ATHERINICHTHYS SALLEI, sp. nov.:—Depth of body rather less than length of head, 5 times in total length. Snout much shorter than eye, the diameter of which is 2\frac{2}{5} times in length of head and equal to interorbital width or length of post-orbital part of head. Lower jaw somewhat shorter than upper; maxillary extending to vertical from anterior margin of eye. Sc. 43/10. D. IV, I 8; A. II 19. Spinous dorsal commencing above origin of anal; anterior rays of soft dorsal and anal produced, longest anal rays equal to depth of body; pectorals falcate, as long as head; origin of ventrals equidistant from posterior opercular margin and first anal ray; caudal emarginate. A sharply defined silvery lateral band as broad as a scale. Description based on a single example, 75 mm. in total length, from Mexico.

This species agrees in every respect with Messrs. Jordan and Evermann's definition of Menidia. It resembles A. brasiliensis in the disposition of the fins and number of

of Menidia. It resembles A. brasiliensis in the disposition of the fins and number of rays, but the latter species has a much longer head, longer snout, smaller eye, &c., and very indistinct lateral band.

SERRANIDÆ.

Many authors have regarded Serranus flaviventris Cuv. & Val. as the female of S. auriga Cuv. & Val. Messrs. Jordan and Evermann give descriptions of three species, viz.: S. dispilurus Günther, S. subligarius Cope, and S. auriga Cuv. & Val., adding S. flaviventris to the synonymy of the last; but in a footnote they state that very probably these three species are identical. I have arrived at the conclusion that S. dispilurus and S. subligarius belong to the synonymy of S. flaviventris, which is very different from S. auriga, as may be seen from the short diagnoses given below.

SERRANUS AURIGA Cuv. & Val.

Depth of body about equal to length of head, $2\frac{3}{5}-2\frac{3}{4}$ times in total length. Snout as long as eye, the diameter of which is $3\frac{1}{2}-3\frac{3}{4}$ times in the length of head and twice the interorbital width. Maxillary not extending to below middle of eye, the width of its distal extremity $\frac{1}{3}$ the diameter of eye. Præoperculum with vertical posterior and horizontal inferior limb, the angle rounded; lower opercular spine stronger and further back than upper. D. X 12–13, commencing slightly in advance of axil of pectoral, third spine very elongate. A. HH 7, second spine not, or but little, longer than third, its length about $2\frac{4}{5}$ times in that of head. Sc. 48–52 $\frac{6-7}{15-17}$, not extending on to upper surface of head; $5\frac{1}{2}$ rows between soft dorsal and lateral line. Two dark blotches on lower half of body, the anterior including ventrals, the posterior extending on to anal, a light area between them.

Diagnosis based on four examples from Rio Janeiro, the largest

150 mm. in total length.

SERRANUS FLAVIVENTRIS Cuv. & Val.

Dules flaviventris Cuvier & Valenciennes, iii. p. 113 (1829). Centropristis brasiliensis Brisout de Barneville, Rev. Zool. 1847, p. 131.

Centropristis dispilurus Günther, Proc. Zool. Soc. 1867, p. 99.
Centropristis subligarius Cope, Proc. Ac. Philad. 1870, p. 120.
Dules auriga Steindachner, Sitzb. Ak. Wien, xcvi. I. 1888,
p. 57, pl. i. fig. 2.

Serranus auriga (part.) Boulenger, Cat. i. p. 287 (1895).

Depth of body about equal to length of head, $2\frac{4}{3}-3$ times in total length. Snout as long as or a little longer than eye, the diameter of which is $4-4\frac{1}{2}$ times in the length of head and $1\frac{1}{3}-1\frac{1}{2}$ times the interorbital width. Maxillary extending to well beyond middle of eye, the width of its distal extremity $\frac{1}{2}$ the diameter of eye. Præoperculum evenly rounded in the whole extent of its posterior margin; lower opercular spine not stronger and not further back than upper. D. X 12–13, commencing somewhat behind axil of pectoral, third spine not elongate, fourth or fifth highest. A. III 7, second spine stronger and longer than third, its length

about $2\frac{1}{5}$ times in that of head. Sc. $43-46\frac{5}{12-14}$, extending on head to posterior margin of eye, 4 rows between soft dorsal and lateral line. 5-7 dark vertical bars on upper part of body, extending on to dorsal fin; a light area on lower part of body in front of anal; a pair of conspicuous black spots on base of caudal.

Diagnosis based on four examples (including the types of *C. dispilurus*) from the W. Indies, the largest 98 mm. in total length. The smaller size of the specimens described makes it still more notable that the eye is smaller and the mouth extends farther back than in *S. auriga*, whilst other differences are sufficiently numerous.

Pristipomatidæ.

Diagramma cavifrons Cuv. & Val., from the coast of Brazil, has been redescribed by Boulenger as D. goeldii; this was doubtless due to Günther having erroneously placed this species in Pristipoma, so that it appears from the British Museum Catalogue that the genus Diagramma is exclusively Indo-Pacific. The synonymy of this species is as follows:—

Diagramma cavifrons Cuvier & Valenciennes, v. p. 290, pl. 123

(1830).

Pristipoma cavifrons Günther, Cat. i. p. 286 (1859).

Genyatremus cavifrons Gill, Proc. Ac. Nat. Sci. Philad. 1862,

p. 256.

Genyatremus luteus* Jordan & Fesler, Proc. Ac. Nat. Sci. Philad. 1889, p. 504; Jordan & Evermann, Fishes N. Am. ii. p. 1342 (1898).

Diagramma goeldii Boulenger, Ann. Mag. Nat. Hist. (6) xx. 1897, p. 294.

MYLACRODON, gen. nov.

Body compressed. Scales moderate, cycloid; lateral line complete, concurrent with the dorsal profile, the tube straight, not extending the whole length of the scale. Mouth moderate, protractile; the maxillary slipping for most of its length under the preorbital, exposed distally, without supplemental bone. series of conical teeth in each jaw, posteriorly becoming shorter, rounded and molar-like; internal to these anteriorly one or two series of small rounded molars; no teeth on tongue or palate. Head scaly; nostrils close together, rounded, the anterior largest; no pit below the chin; preoperculum serrated; operculum not spinate. Gill-membranes united far forward, free from the isthmus; seven branchiostegals; pseudobranchiæ present; gillrakers rather short. Two dorsals continuous at the base, with XI, I 13 rays; anal with III 10 rays; both with a scaly sheath at the base. Pectorals asymmetrical, with 18 rays, the upper rays longest; ventrals below pectorals, each with a strong spine and a scaly axillary process; caudal emarginate.

^{*} The identity of this species with Lutianus luteus Bloch is extremely doubtful.

Air-bladder large, with two long lateral horns anteriorly and with a series of compartments along each side: anteriorly attached by a strong unpaired muscle running forward above the cesophagus.

Mylacrodon goeldii, sp. nov. (Plate VII.)

Depth of body $2\frac{2}{3}-2\frac{4}{5}$ times in total length, length of head $3\frac{1}{2}-3\frac{3}{5}$ times. Snout as long as eye, the diameter of which is 4 times in the length of head, interorbital width $3\frac{1}{4}$ times. Lower jaw included within the upper; maxillary extending to below anterior quarter of eye; præorbital entire. 12–13 gill-rakers on lower part of anterior arch. Sc. 55–60 $\frac{7-8}{16-18}$; upper part of head, cheeks, and opercles scaly; snout, jaws, and præorbital naked. D. XI, I 13, commencing somewhat behind the axil, first spine very small, second short, third longest and equal to $\frac{3}{4}-\frac{5}{6}$ the length of head, thence decreasing; afterior soft rays longest, equal to seventh spine. A. III 10, first spine short, third $\frac{2}{3}-\frac{3}{4}$ of the length of second, which is equal to half the length of head. Pectorals scaly at the base, $\frac{2}{3}-\frac{3}{4}$ the length of head, ventrals a little longer, not extending to vent; caudal strongly emarginate. Dark grey above, silvery below, fins blackish.

Description based on two examples from Rio Janeiro, 225 and

230 mm, in total length.

GERRIDÆ.

The East Indian genera Gazza Rüppell and Liognathus Lacep. (Equala Cuv.), until now placed with or near the Carangidæ, are without doubt very nearly allied to Gerres, which they most closely resemble not only in external features but also in their internal anatomy. The relations of the genera of this family are shown in the subjoined key:—

 $\Lambda.$ Scales moderate or large ; gill-membranes free from the isthmus.

B. Scales small; gill-membranes narrowly joined to isthmus; D. VIII 15-16. A. III 14.

The distinction of the species of the genus Gerres is a matter of some difficulty. Dr. Goeldi's collection includes examples of a Gerres belonging to the section with preoperculum and preorbital serrated and with dark longitudinal lines along the rows of scales, and which I identify with G. patao Poey. Nearly all the American species of this section resemble each other very closely in proportions of the head and body, size of the eye, extent of the mouth, and number of scales and fin-rays; and it appears that the most constant characters which can be used for specific distinction are the number of gill-rakers, the length of the second

dorsal and anal spines and of the pectoral, the number of rows of scales between the lateral line and the sheath at the base of the dorsal fin, and the number of anal rays, III 7 or III 8. Messrs. Jordan and Evermann give the number of anal rays for one species as III 7-8, but I have been unable to find a single case throughout the genus where the number of anal rays is variable in a species, and there is good reason for supposing that in this instance two different species have been confounded. The same authors regard G. patao Poey as identical with G. brasilianus Cuv. & Val., which is said to be only doubtfully distinct from G. lineatus Humboldt, in the synonymy of which G. axillaris Günther is included. Other species regarded by them as valid are G. brevimanus Günther, G. plumieri Cuv. & Val., G. embryx Jordan & Starks, and G. mexicanus Steind.

After examining all the available material in the British Museum Collection and referring to the original descriptions, I have arrived at conclusions somewhat different from those of the authors above mentioned, and the relations of the American species of this section which I regard as valid are shown in the

following key and short revision:—

Præorbital and præoperculum serrated; dark longitudinal lines along the rows of scales.

I. Anal with III 8 rays.

A. Pectoral \(\frac{1}{5}\) length of head 1. G. brevimanus G\(\text{uinther.}\)

B. Pectoral as long as or a little longer than head. a. Second dorsal spine as long as or a little

longer than head. Second anal spine 5 length of second dorsal spine ... 2. G. plumieri Cuv. & Val.

Second anal spine 5 length of second dorsal spine ... 3. G. mexicanus Steind. b. Second dorsal spine $\frac{2}{3}$ - $\frac{1}{5}$ length of head.

About 15 gill-rakers on lower part of anterior arch... 4. G. lineatus Humboldt. About 12 gill-rakers on lower part of anterior arch... 5. G. axillaris Günther.

II. Anal with III 7 rays 6. G. patao Poey.

GERRES BREVIMANUS Günther.

This species is at once distinguished by its short pectoral; the body is a little less elevated than in its allies; second anal spine 4 the length of second dorsal spine, which is 4 the length of head; 11 very short gill-rakers on lower part of anterior arch.

A single example from Chiapas, West coast of Mexico.

GERRES PLUMIERI Cuv. & Val.

The elongate second dorsal spine and the second anal spine nearly as long are diagnostic; pectoral as long as head or a little longer; 13-14 very short gill-rakers on lower part of anterior arch.

Atlantic coasts of Tropical America. Lake Yzabal.

Gerres Mexicanus Steindachner.

This species, from the R. Teapa, apparently differs from the preceding only in the shorter second anal spine.

GERRES LINEATUS Humboldt.

The British Museum possesses only a single example of this species, from Mazatlan. The pectoral is a little longer than the head; the second anal spine nearly equals in length the second of the dorsal, which is a little less than \(\frac{3}{4}\) the length of head. 15 very short gill-rakers on the lower part of anterior arch; 6 scales between first dorsal spine and lateral line, and 4 rows of scales between dorsal sheath and lateral line for nearly the whole length of the dorsal fin.

Apparently this species occurs also on the Atlantic coasts of Tropical America, whence it has been described as G. brasilianus Cuv. & Val. and Gerres embryx Jordan & Starks. There is nothing in the descriptions of these species which does not apply to G. lineatus, except that Messrs. Jordan and Evermann give the number of gill-rakers on the lower part of the anterior arch as 11 for G. brasilianus, but probably this number has been taken from specimens with 7 soft rays in the anal, which are here regarded as belonging to another species, viz. G. patao Poey.

GERRES AXILLARIS Günther.

Three examples of this species from Chiapas agree in having 5 scales between the first dorsal spine and the lateral line, and only 3 rows of scales between the dorsal sheath and the lateral line for the whole extent of the sheath. There are 12 gill-rakers on the lower part of the anterior arch, which, although short, are longer than in G. lineatus and nearly equal to \(\frac{1}{4}\) the diameter of eye. In other characters similar to the preceding species.

GERRES PATAO Poey.

The resemblance of this species to G. lineatus is most remarkable, and it is only to be separated from it by the anal with III 7 rays, and the fewer and somewhat longer gill-rakers, of which there are about 11 on the lower part of the anterior arch, about ½ the diameter of eye in length. Some examples have the premaxillary groove densely covered with small scales as far forward as the anterior margin of the eye, but in others these are deciduous, and in some even the premaxillary groove shows no trace of having been scaly, so that this is an unsafe character to use in specific diagnoses.

Hab. Atlantic coast from Cuba to Bahia.

TRIGLIDÆ.

PRIONOTUS BEANII Goode.

This species has hitherto been known only from one specimen, from off Trinidad, and the taking of another at Rio Janeiro seems worth recording.

Peristedion altipinnis, n. sp. (Plate VIII. fig. 1.)

Depth of body $5\frac{1}{2}-5\frac{2}{3}$ times in total length, length of head Proc. Zool. Soc.—1903, Vol. II. No. V.

about $2\frac{2}{5}$ times. Snout, including processes, $1\frac{2}{3}$ times as long as eye, the diameter of which is 4 times in the length of head, interorbital width $4\frac{2}{3}$ times. Interorbital space concave; no spines on snout. Anterior processes longer than broad, flat, rounded, with denticulated edges; from each a ridge running backwards, ending in a rather broad, flat, somewhat obtuse præopercular spine; a short ridge below eye, without spine; a short feeble spine above posterior part of eye, a stronger one behind it near posterior margin of head, below which another, somewhat weaker; operculum with well-developed spine. Margin of lower jaw with groups of short tentacles and a pair of longer fringed tentacles which extend back scarcely beyond the cleft of mouth. Gill-rakers moderate, about 16 on lower part of anterior arch. 27 scutes in 4 longitudinal series, the 3 upper series with strong recurved spines, the spines of the lower series quite rudimentary. DVIII, 17, the spines slender, the third longest and equal to $\frac{3}{5}$ the length of head, thence decreasing; soft rays increasing in length to about the sixth, which is as long as the longest spine, thence decreasing. A I 16, about \(\frac{3}{5}\) the height of dorsal; pectoral half as long as head; ventrals extending to anal; caudal emarginate. Greyish (in spirit); pectorals dark.

Description based on two examples from Rio Janeiro, the larger

190 mm. in total length.

This species is very distinct from others so far described, and it is difficult to say which should be considered its nearest ally.

CARANGIDÆ.

The American species of the genus Scombroides Lacep. (Chorinemus Cuv. & Val.) belong to the section Oligoplites Gill, distinguished by having 4–5 dorsal spines, no pterygoid teeth, cheeks with sclerous plates attached to the suborbitals, and linear scales. There has been considerable difference of opinion as to the number

of species which ought to be recognised.

Three examples of S. saliens Bloch from Rio Janeiro agree in every particular with others in the British Museum Collection from the Pacific Coast of Mexico and Ecuador. This species is readily distinguished by the anterior dorsal with 4 spines, the deep body (depth 23-3 times in total length), and the wide mouth (the maxillary extending well beyond the eye). S. palometa Cuv. & Val., hitherto regarded as a variety or subspecies of S. saliens, is really quite distinct, the depth of the body being contained about 32 times in the total length and the maxillary only extending to below the posterior margin of the eye, or a little beyond. This species has hitherto been recorded only from the fresh or brackish waters of Lake Maracaibo, Venezuela, but the British Museum Collection contains a small example from Lake Yzabal, a large inland lake communicating by the Rio Dulche with the Bay of Honduras. S. altus Günther and S. saurus Bl. Schn. each has five spines in the anterior dorsal; in the former the body is deep,

as in *S. saliens*, and the maxillary extends to below the posterior margin of the eye; the latter has a more slender body than any other species of this section, and the maxillary not reaching the posterior margin of the eye; like *S. saliens*, it occurs on both the Atlantic and Pacific coasts. A fifth species, *S. mundus* Jordan & Starks, from the Pacific Coast of Central America, is said to differ from *S. altus* in having a larger mouth; an example received from Dr. Jordan under this name has only four spines in the anterior dorsal, and is identical with *S. saliens*: it may be that the number of spines is variable in this species.

SCOMBRIDÆ.

American ichthyologists distinguish between Scombromorus regalis Bloch and S. maculatus Mitchill; but the supposed differences are so few, so trivial, and, judging by the few specimens I have been able to examine, so inconstant, that there can be but little doubt that the two are not distinct, and that the latter should be added to the synonymy of the former. American authors also agree in considering Cybium immaculatum Cuv. & Val. to be a synonym of Scombromorus cavalla Cuv. & Val. I am inclined to think, however, that two small examples in the British Museum Collection should be referred to S. immaculatus, and that they are specifically distinct from S. cavalla, two large examples of which are included in Dr. Goeldi's collection. The number of fin-rays is the same and the course of the lateral line similar in both species, and the differences will be apparent from the following short comparison:—

Scombronorus cavalla Cuv. & Val.

Depth of body $5\frac{1}{2}-5\frac{2}{3}$ times in total length, length of head $4\frac{2}{3}$ times; depth of head (at level of upper angle of gill-opening) $1\frac{3}{5}$ times in its length, diameter of eye $6-6\frac{1}{2}$ times. Gill-rakers nearly equal to $\frac{1}{3}$ eye-diameter, 8 on lower part of anterior arch. Jaws with about 15 teeth on each side. Body dark above, silvery below, with traces of dark oval spots on the sides.

Two specimens, 560 and 620 mm. in total length, from Rio

Janeiro.

Scombromorus immaculatus Cuv. & Val.

Depth of body $3\frac{4}{5}$ -4 times in total length, length of head 5 times; depth of head $1\frac{1}{3}$ times in its length, diameter of eye $4\frac{1}{2}$ - $4\frac{4}{5}$ times. Gill-rakers knob-like rudiments, 8-9 on lower part of anterior arch. Jaws with 8-10 teeth on each side. Body dark above, silvery on sides and below, without spots.

Two specimens, 150 and 185 mm., from San Domingo.

OPHIDID.E.

The genus Genypterus Philippi is distinguished from Lepophidium Gill by the stronger dentition, the outer series of teeth in the jaws being large and pointed, and the palatines having a single series of strong teeth. The scales are small, regularly arranged, deciduous; all the species have a strong opercular spine, and in none is a spine on the snout developed.

Genypterus brasiliensis, sp. n. (Plate VIII. fig. 2.)

Depth of body about 7 times in total length, length of head about 4½ times. Snout a little longer than eye, the diameter of which is 5-6 times in the length of head, interorbital width about 7 times. Lower jaw shorter than upper; maxillary extending beyond posterior margin of eye, the width of its distal extremity equal to diameter of eye. Scales on upper surface of head extending as far as posterior margin of eye; cheeks and opercles scaly; interorbital space, snout, and jaws naked; 15-18 rows of scales between anterior dorsal rays and lateral line. About 8 gill-rakers on lower part of anterior arch, the upper of moderate length, graduating to rudiments below. Dorsal beginning above posterior third of pectoral when laid back; pectoral 3 times in length of head, posterior ray of ventral twice. Greyish above, silvery below.

Description based on five examples from Rio Janeiro, the largest

440 mm. in total length.

Apparently no species of this genus has hitherto been described from the Atlantic coast of America. In all other species the dorsal commences above the middle of the pectoral when laid back.

PLEURONECTIDÆ.

Solea fonsecencis Günther.

The occurrence of this species at Rio Janeiro is interesting, as it has been previously recorded only from the Pacific coast of Mexico and Central America. I have carefully compared the single example in Dr. Goeldi's collection with others from the Gulf of Fonseca and the Rio Presidio, and am unable to detect the least difference between them.

LOPHIIDÆ.

LOPHIUS PISCATORIUS Linn.

A small specimen from Rio Janeiro is exactly similar to others of this species from both sides of the North Atlantic.

EXPLANATION OF THE PLATES.

PLATE VII.

Mylacrodon goeldi ($\times \frac{s}{4}$), p. 63.

PLATE VIII.

Fig. 1. Peristedion altipinnis $(\times \frac{3}{4})$, p. 65. 2. Genypterus brasiliensis $(\times \frac{1}{2})$, p. 68.